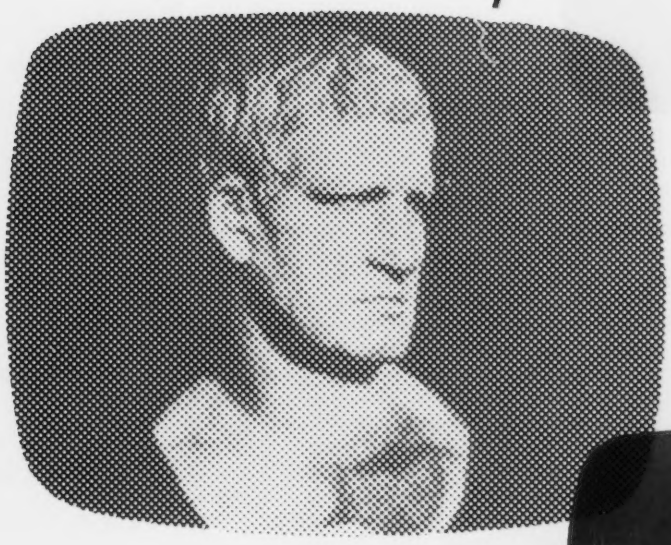

SEPTEMBER 1956

FORUM

UNIVERSITY OF HOUSTON

SPACEMAN

This is Dr. Hubertus Strughold, world-renowned medical authority and head of the United States Air Force's Department of Space Medicine, who has a major role in "Doctors in Space," one of a series of educational television films being produced by the University for national distribution.

See page five and "Cameras in the Classroom."

CONTENTS

CAMERAS IN THE CLASSROOM 5
OBSOLESCENCE AND ENGINEERS *by Frank M. Tiller* 9
SEA CREATURES IN CAPTIVITY *by Donald C. Uhrbrock* 12
DEFINING THE TWO WORLDS OF MAN *by Maurice Natanson* 14
THE MEN ON THE FIFTH FLOOR *by Jack A. Haddick* 17
VERDI AND SCHILLER *by Alfred R. Neumann* 20
THE UNIVERSITY CALENDAR 23

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FORUM

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A half-million dollar television film program will place faculty before vast new audience

Cameras in the classroom

Within the next year, the face (youngish), figure (slight), voice (hinting of the late Fred Allen) and mannerisms of Dr. John A. Rider, associate professor of physics at the University, will be familiar to an estimated 40 million of his fellow citizens.

Dr. Rider will be telling these people about space—its atmospheric pressure, its cosmic rays, its solar radiation, and their effect on men in flight. With the aid of some of the leading authorities in the field and a staggering amount of graphic material, he will guide them through the thirteen half-hour segments of an educational television series called "Doctors In Space."

The space medicine films will be one of twelve distinct series to be produced by the University—specifically, by the Film Production Unit of KUHT—during the next four years under an arrangement with the Educational Television and Radio Center of Ann Arbor, Michigan.

The total footage involved is the equivalent of 52 feature-length films, or a good many more than Metro-Goldwyn-Mayer turned out last year. And just as the space films will bring Dr. Rider before a vast new audience, other series will do the same for University colleagues in such fields as anthropology, biology, geology, Latin American culture, music and oceanography.

Increasing the usefulness to the community of the nation's top teachers—in 40 years in the classroom, the average professor may face 16,000 students—is one of the primary aims of the Educational Television and Radio Center, a non-profit corporation chartered under the laws of the State of Illinois.

Governed by a 12-member board of directors which includes some of the most distinguished names in education, the Center was established in December, 1952, with the aid of a grant from the Fund for Adult Education. Since May, 1954, more than 100 film series totaling 1,200 separate programs have been produced or otherwise developed by the Center, distributed to the 20 member stations in its National Educational Television network, given additional coverage through extended services (to commercial stations) and audio-visual plans.

Central to the ETRC's philosophy is the assumption that the educational television program must in fact be educational, must, in other words, effect changes in the viewer. Emphasis is placed on programs that, as the Center phrases it, "will inform, develop skills and abilities, increase understanding, inculcate attitudes and values, and affect behavior . . ."

To obtain material of this calibre, the ETRC has turned to the universities, which today supply the bulk of its programs under direct contract. For this and other activities, the Center last fall was awarded a Ford Foundation grant of more than $6,000,000 (the University can receive approximately $500,000 under the terms of its present arrangement).

KUHT's Film Production Unit, brought into being in 1955 with a healthy $34,500 boost from the Fund for Adult Education, is hidden away in a corner of the radio and television department's scene shop in the upper reaches of the Ezekiel Cullen building. Here Dr. John Meaney, an amiable 38-year-old ex-English teacher and the film unit's director, presides over a fulltime staff of three and a host of parttime assistants.

Together they have produced to date twelve half-hour films in a series, already distributed to more than

continued

INTENT DON WILLIAMS FOLLOWS THE ACTION WITH A BOOM MIKE

RIDER AND STRUGHOLD REHEARSE FOR JIM BAUER'S CAMERA

CAMERAS continued

Filming means

20 educational stations over the nation, titled "The Nature of Life" and centering about Dr. Burr Roney, professor of biology at the University; a fifteen minute color documentary treatment of the University called "Center of Learning," with commentary by *March of Time* voice Westbrook van Voorhies, financed by the Alumni Association; a number of brief films for the psychology department, grouped under the general title "Chronic Brain Stimulation in Monkeys"; "Easy Does It," a fifteen minute instructional film on home nursing; "Art Review," a guided tour of the galleries of Houston's Museum of Fine Arts; and a number of others.

Its current ETRC contract is, obviously, the film unit's biggest undertaking up to this point. Each series involves endless planning, coordination, securing of approval, checking, changing and improvisation. "It's nevertheless something that we feel we should do," says Dr. John C. Schwarzwalder, chairman of the University's radio and television department. "In certain areas the University has things to offer that can't be found anywhere else in the country—and by putting them on film, we render a service both to ourselves and educational television as a whole."

II

All of the principals in the making of "Doctors In Space" gathered in KUHT's fifth floor main studio early one morning last June for the filming of the pilot half-hour, to be number six in the series, titled "The Unseen Burden." From Randolph Air Force Base in San Antonio had come Colonel Henry M. Sweeney, a short, harsh-voiced, angry-looking man in summer suntans and Director of Research at the School of Aviation Medicine; Green Peyton, a scholarly Air Force civilian employee, author of the script; and Dr. Hubertus Strughold, the world's most eminent authority on the medical problems of space, in gray suit and glasses, looking not at all out of place in the mild confusion of the studio.

The set for this particular episode, a 20-foot photo-mural of clouds purchased from Sears Roebuck (for $39.00) by KUHT Scene Designer George Collins, stood against the studio's west wall; in front of it were a desk with a collection of blueprints and, to the left of the desk, a miscellany of charts, laboratory equipment and aircraft models. Nearby, Meaney stood unhurriedly checking over the script with members of his crew, most of them student assistants. A departmental secretary came in with coffee for all hands, and Colonel Sweeney mentioned that he had to be back in San Antonio by 6:15 PM. It was then shortly after 10 AM.

Inside the control room, which overlooked the very much larger studio floor, Pat Coakley, the engineer in charge on this occasion, was running a film clip on the monitor. The film clip showed a pilot reacting to a cockpit puncture: as air rushed in, his head rolled back and his lips fluttered visibly. Coakley ran the clip from start to finish three or four times; it was scheduled to form part of the finished film.

Outside, in the studio proper, George Collins moved from place to place spraying glass instruments with wax to cut down glare from the overhead lights. Off in a corner, Dr. John Rider and Colonel Sweeney were rehearsing their introductory bit. "Call me Mike," Colonel Sweeney read aloud, flatly. "Call me Mike," he said, with more conviction. "Very well, Mike," Rider read. "Tell me, were you . . ."

Three or four people began shouting "Quiet on the set please" simultaneously, and when they stopped Meaney gave the word for the first camera rehearsal to begin. Rider, noticeably skittish, stepped behind the desk and faced the nearest camera. At a nod from Meaney he began to give his opening lines. "In Greek mythology," he said,

work, worry, long hours for crewmen

WAITING FOR A LEVEL CHECK

"Atlas was the god who carried the weight of the heavens on his shoulders. Here on earth, every human being is an Atlas, bearing the burden of the sky on his shoulders. Because we cannot see it, or taste it, or feel it, we forget that it exists. But the air around and above us is composed of solid particles of matter, as the sea is . . ."

As Rider talked, Meaney stood next to the glass inside the control room, calling instructions to the cameramen every now and then through their headphones. One of the control room monitors was carrying an ancient Mickey Mouse cartoon being broadcast by one of the local commercial stations. Rider, outside, had picked up a bar of lead about three feet long, with which he was demonstrating the pressure of the atmosphere on the human body.

"Here with us today," Rider said, "is Doctor Hugo Strughold, the world's most . . ." Strughold, just out of camera range, looked up at "Hugo," then back down at his shoes. "Doctor Strughold," Rider went on, a little more composed now in being able to shift the camera eye to his colleague, "what happens to the human body as its pressure is removed on the borders of space? Will it explode, as some fish are said to do when they are brought up from the depths of the ocean?"

Strughold, who had moved behind the desk, stood awkwardly with both hands on his hips, looking thoroughly uncomfortable. But when he spoke it was in a measured, deliberate voice with a slight accent. "No, Doctor Rider," he said, "the human body is too tough for that. But it does suffer from various other difficulties . . ." which he went on to enumerate.

Behind the glass, Meaney suddenly noticed that Strughold was reading his lines from a script on the desk, giving the cameras a fine view of the top of his head. He relayed this information to the floor manager; the latter snapped his fingers, then clapped his hands, but Strughold plunged doggedly on, chin resolutely planted on his chest.

Meaney then gave his own copy of the script to John La France, a student assistant, with instructions to have Strughold's lines typed on a long sheet of paper, using a typewriter with half-inch characters. Coakley, whose console panel needles were wavering, said "Boom man make sure Paul is getting something on two" into his microphone. The T-shirted crewman manipulating the large microphone boom out in the studio delicately lowered the mike a few inches in the general direction of Paul Schlessinger's camera.

Now Sweeney moved onto the set and stood at attention while Strughold talked about him, shrugging from time to time to adjust his uniform coat. He stood with one hand inside his jacket while Strughold, also perceptibly grateful to be about to hand on the burden of conversation, announced that the colonel had been the first man in the world to undergo explosive decompression, and introduced him very politely to Rider. "Call me Mike," Sweeney said.

Coakley threw the film clip on a small monitor in the studio and Sweeney lectured about the proceedings on the screen while Strughold, relieved, crept off camera. The sequence was running too long, and Meaney, deciding to cut everything after the film clip, interrupted Sweeney's talk and called a break. It was not a bad rehearsal, they decided.

George Collins stepped forward to adjust somebody's bowtie while the cast waited for a typist to complete the "cheater" which Strughold would use during the actual filming. Coakley, in the control room, yawned enormously and abruptly became very busy. He quickly rigged two Ampex tape recorders to take down the audio, barking into the mike to establish a level. Although the filming was to be done with a pair of Auricon sound-on-film

continued

MEANEY (RIGHT) WORKS OUT SCRIPT CHANGE

CAMERAS

continued

cameras in the hands of Schlessinger and Jim Bauer, the sound track on the film would be used only to provide a guide for the film editor when he began cutting back and forth between the reels the two cameras had exposed.

The cheater was finished, and John La France stood with it just behind Rider while Strughold looked past him and read from the text. It seemed to work satisfactorily, and Meaney decided to put the sequence on film.

Collins stood in front of the cameras with a long narrow clapstick, a slate on which was chalked "Space 6, Scene 1, Take 1," and Meaney began a litany with members of the crew.

"Camera ready?"

"Camera ready."

"Sound ready?"

"Sound ready."

"Roll sound."

"Sound rolling."

"Roll camera."

"Camera rolling."

"Mark it," Meaney said. Collins clapped the clapstick, and Rider began "In Greek mythology, Atlas . . ." It was now 1 PM and Meaney called a break for lunch.

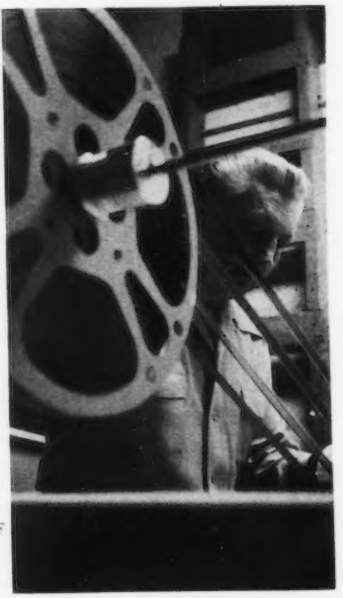
At 1:30 PM the filming began again, and Meaney, a little more specific now in what he wanted, kept up a running conversation ("Two get ready to pan in on Strughold," "Paul back over and get a close shot on Rider's face") with the men on the floor. While Coakley watched the tape machines, and, intermittently, "I Married Joan" on the monitor, the action went quickly forward. Rider got Strughold's first name right, Strughold looked the cameras straight in the eye, and Sweeney kept his hands out of his coat. "Call me Mike," he said firmly, warmly. By 3:30 PM they were through. Everybody stood around for a moment as the lights went down suddenly. "That's mighty good Doc," Sweeney said.

III

When the filming, and whatever retakes there are to be made, has been completed, the film goes to Editor Arnold Bergene, who puts together a work print. When this has been checked and approved, and if no further dubbing or lab work is necessary, the finished print is made and the film started on its way to the distribution center in Ann Arbor.

Under the terms of its present arrangement with the Center, the Film Unit will submit a number of proposals to Ann Arbor each year, of which ETRC will choose three for production. Already approved and nearing completion is an anthropology series called "People Are Taught To Be Different" being filmed in conjunction with Texas Southern University, and proposals for another biology series, again with Dr. Roney, and a series titled "Horizons Down," featuring Dr. H. B. Stenzel of the University's Department of Geology, are pending.

Some of his work carries Dr. Meaney far afield (for the space series, as far as Dayton, Ohio and Wright-Patterson Air Force Base, where he culled official Air Force footage last month); much of it is done right on the University campus. In either case, he and his staff face the continuing task of bringing the newest of techniques to bear on one of educators' oldest problems: the dissemination of knowledge on a general basis without a general adulteration of content. It is no easier in the hectic business of film-making than elsewhere.



EDITOR ARNOLD BERGENE PUTS TOGETHER A PRINT

Obsolescence and Engineers

By Frank M. Tiller

How rapidly do young engineers become obsolete? Before discussing this question, inquiry should be made as to the meaning of the expression "obsolescent engineer." Applied to a machine or a piece of equipment, the term "obsolescent" would indicate that the machine no longer functions satisfactorily. An obsolescent engineer, contrasted with a dynamic worker, permits his engineering foundation to deteriorate until he ceases to be able to solve significant scientific problems in a satisfactory manner. The difference between machine and man, however, lies in man's ability to avert obsolescence.

Search the technical journals and you will find indications as to how rapidly an engineer may become obsolete. Here are some excerpts from advertisements published recently in *Chemical Engineering Progress* and *Chemical Engineering News*:

Rapidly Growing Chemical Company: ". . . . Prefer young man under thirty years of age."

Nationally-known Paint Company: ". . . . Desires to employ a recent graduate chemical engineer, aged 25 to 30."

Chemical Giant: ". . . . Prefer age 25 to 30."

Cork Company: ". . . . Are you 35 or younger?"

Large Rubber Company: ". . . . 0 to 5 years experience for junior chemist."

Well-Known Soap Company: ". . . . Engineers graduated within the last 10 years."

Growing Research Group: ". . . . Ph.D. and up to 5 years' experience."

Apparatus Manufacturer: ". . . . If you are 25 to 35."

And the American Chemical Society itself advertises for ". . . . chemical engineers with up to five years' experience."

Why are so many companies not interested in men over the 30-35 age bracket, particularly with all of the fanfare concerning the shortage of engineers? There are several ideas which these ads suggest:

1) The engineer does not continue the learning process after graduation and thus does not increase his worth.

2) He stagnates while doing a highly specialized job.

3) Some of the fault lies with his employers. In general, they may be unwilling to pay higher salaries commanded by older and more experienced men. Company policies, frequently directed toward younger men, may prevent hiring of older men who presumably would fill desired positions.

In considering my own education, if I had relied solely on my undergraduate training, my education would have been roughly equivalent to that of a sophomore or first-half junior in the present chemical engineering program. In addition to a little organic and physical chemistry, I studied stoichiometry, devoted a few afternoons in a lab to distillation theory, and attended a few lectures on fluid flow and heat transmission. Conspicuous by their absence were filtration, extraction, thermodynamics, kinetics, and mathematics above elementary calculus. With nothing more than this educational background, I would hardly be considered a well-trained

continued

FAILURE TO CONTINUE THE LEARNING PROCESS

engineer today.

Even though in teaching I have had better than average opportunity to keep abreast of new developments, I feel that I am behind in statistical mechanics, quantum mechanics, electronics, and analysis of structures. I certainly need a brush-up on nuclear physics, complex variables, and analytical dynamics. Just like all other engineers, I must continually fight a battle to avoid obsolescence, particularly in view of the administrative work I must do.

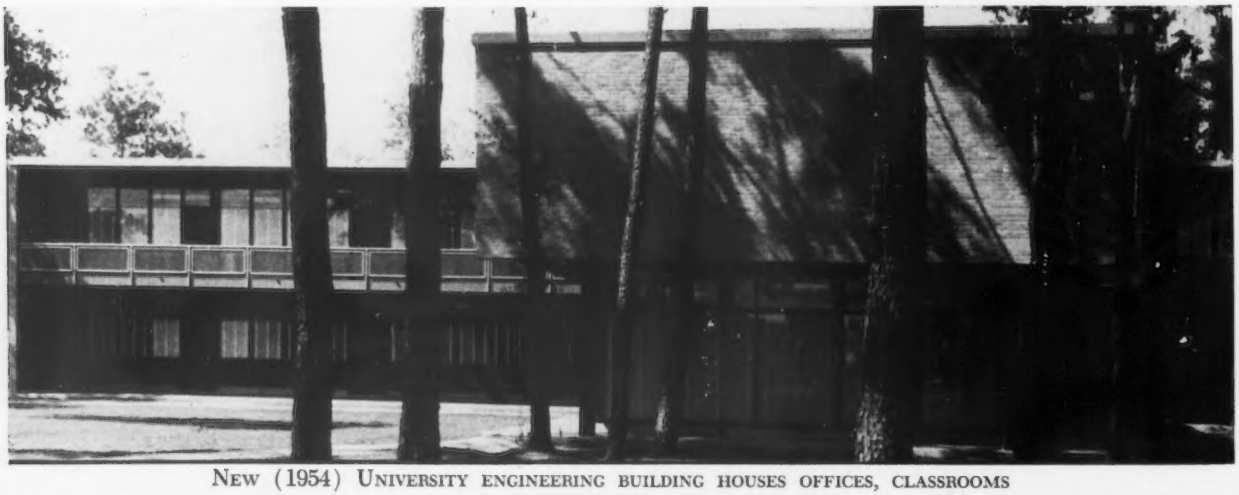
In graduate courses, I have frequently found the typical B.S. deficient in mathematics. It is difficult to see how the average engineer can become acquainted with high-level scientific work without some knowledge of infinite series, vector analysis, partial differential equations, Fourier series, Laplace transformations, and complex variables. Nor is it easy to see how an engineer can obtain this necessary background without at least twelve semester hours beyond differential equations.

One result of the failure of engineers to continue the learning processes is frequently apparent in the topics which are scheduled for meetings of technical groups. Regularly, program committees suggest that a speaker not choose too technical a subject. It is true that diversity of scientific endeavor makes it impossible for a man to follow many highly specialized fields. But it is unfortunate that even fields depending solely upon the very fundamentals of engineering must also be avoided. Subjects that are too mathematical, that depend too much on thermodynamics or too much on any other basic undergraduate subject are frequently ignored.

When touched by obsolescence, engineers are inclined to say: "I haven't had any use for calculus." Or, "Mathematics really isn't of any importance in practical situations." Or, "After all, the real road to financial return is in sales and management." These are the remarks of men who are rapidly becoming outdated as true engineers.

Oliver Heavyside's quotation concerning the first chapter of his book on electromagnetic theory is worthy of note: "The first chapter will, I believe, be found easy to read and may perhaps be useful to men who are accustomed to show that they are practical by exhibiting their ignorance of . . . mathematical methods of inquiry . . . . We cannot all be Newtons or Laplaces, but that there is an immense amount of moderate mathematical talent lying latent in the average man, I regard as a fact."

With only a meager introduction to the mathematical field, an engineer is unable to read important works concerned with heat conduction in jet engines, reservoir



NEW (1954) UNIVERSITY ENGINEERING BUILDING HOUSES OFFICES, CLASSROOMS

UPPER LEVEL VIEW OF PRIZE-WINNING STRUCTURE

IS CRUCIAL FACTOR

work in petroleum engineering, and fluid mechanics. And much of the material in the technical journals must remain a mystery to him as well.

I have encountered classes of graduate engineers in which not a single member was aware that substantial progress had been made in such areas as filtration, boundary layer theory, and diffusional operations. In one class of men originally from refineries, not one member knew why multiple-pass heat exchangers, rather than single-pass exchangers, were used so extensively in the plants in which they were employed.

In part the company attitude of disinterest in men over 30-35 years of age is justified, and in part it is not. Certainly it seems peculiar at a time of a great numerical shortage of scientests and engineers that men beyond a certain age level cannot find adequate positions.

Many companies explain that a policy of hiring mature men would adversely affect the number of desirable positions available to their young men. This is a strange argument for organizations which have more projects than manpower. It should not be necessary to employ experienced men only on the management level. Rather, they could work on an equal basis with other engineers being neither superior nor inferior in position.

Probably some of the policies toward older men have been determined by the large number of young men graduated in recent years. Many concerns, finding a substantial portion of their engineering staff to be under 35 years of age, establish their policies according to the needs of these men. However, we must keep in mind that in another 15 years the 25-to-30 year-old will be in the 40-to-45 year-old bracket. The eventual result of not employing men past 35 will be the immobilization of engineers over 40. Such a policy could have unfortunate repercussions in the further development of engineering as a respected profession.

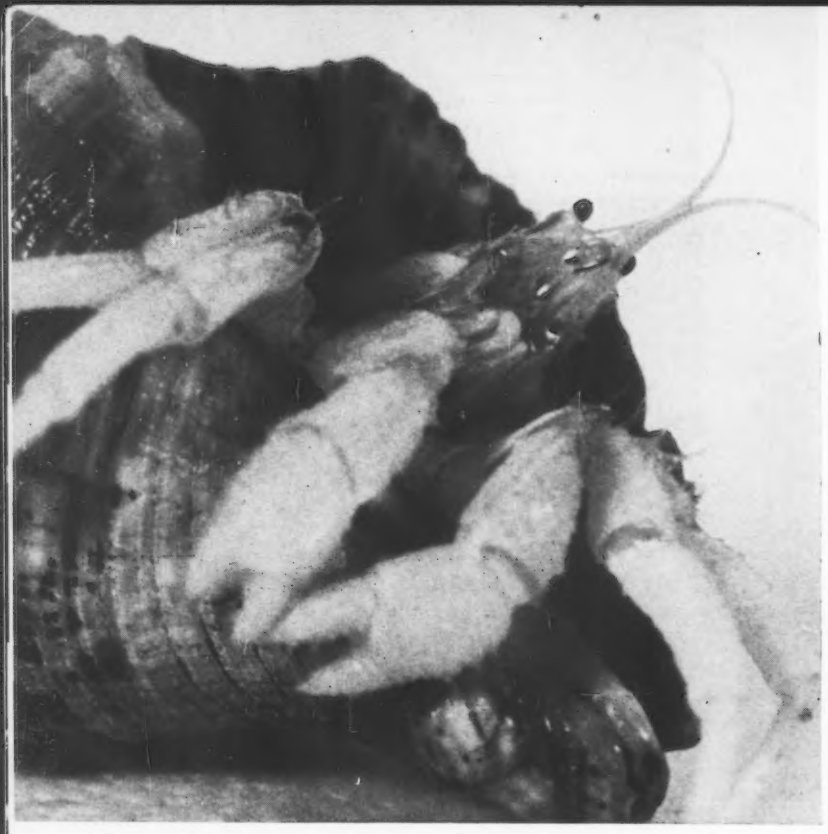
Many organizations, among them the Texas Society of Professional Engineers, have become concerned about the trend toward unionization of engineers. I cannot help but feel that men failing to keep their engineering knowledge up to date are likely to engage in union activities in the unconscious belief that such affiliation will substitute for lack of skill. Unionization is obviously no real solution to the problem of obsolescence; for that we must look elsewhere.

Ultimately, the responsibility for avoiding obsolescence lies with the individual. As a beginning, I would strongly recommend that engineers familiarize themselves with two important fields: nuclear physics and high speed computation. Those who have not studied physics should certainly take the time to learn something of Bohr's model of the hydrogen atom and Milikan's work with electrons, as well as some recent studies involving fundamental nuclear particles. Engineering will be immeasurably affected by the computer revolution. Electronic digital computers have completely revised man's conception of the magnitude of the problems which may be attempted.

But in a larger frame of reference, the responsibility for guiding engineers rests largely with the universities. While companies can do much to encourage professionalism and continuation of the learning process, it is in the universities that real promise of a solution exists.

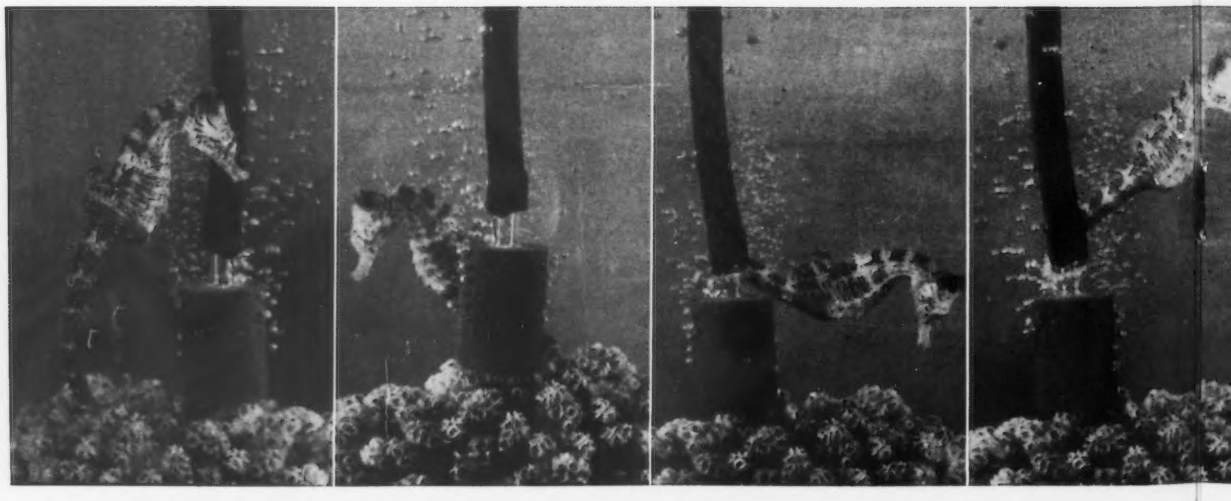
Universities determine the caliber and attitudes of men in the profession. Adherence to rigid standards of classroom performance and insistence upon fundamentals in the curriculum as opposed to changing and transitory technological operations are necessary to high-level training. Engineering programs have been deficient in mathematics and continue to be so. Engineers equipped with a good mathematical background have more ability to continue their education.

Much could be done to encourage continuation of education in non-credit work, as well as in graduate training leading to a degree. Various short courses, informal seminars, and lectures devoted to broadening of scientific vision should be available. Unfortunately, the high cost of education and the critical state of finances in institutions of higher learning offer a bar to widespread adoption of courses which could be significant in furthering the training of young graduates. But regardless of the difficulties, the various colleges of engineering must find a way to help lead engineers into a process of continual self-improvement.

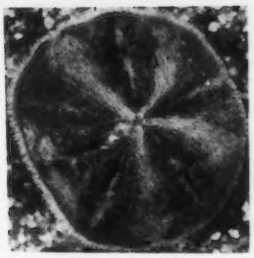


HERMIT CRAB EMERGING FROM HIS SPLENDID ISOLATION

Sea Crea



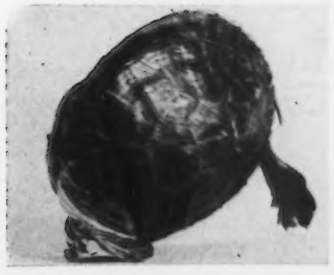
A PLAYFUL SEAHORSE EXERCISES WITH THE AID OF A CONVENIENT TUBE

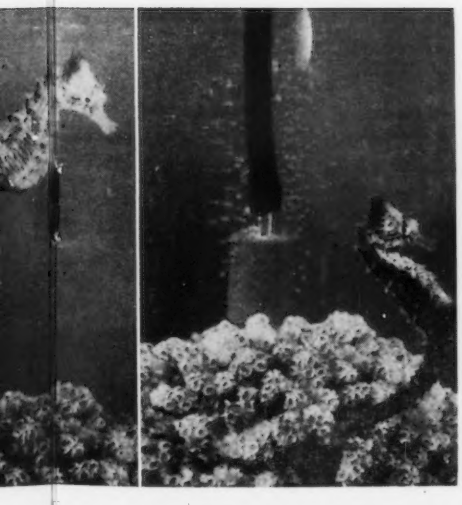


SAND DOLLAR

The sea animals on these pages, ranging from Pseudemys Scripta elegans (the turtle at lower right) to the sand dollar at left, pass their days as guests of the University's Dr. Thomas E. Pulley, who maintains a marine biology laboratory on the campus. Fitted with a special lens, Don Uhrbrock's camera caught these unusual portraits at close range.

eatures in Captivity





THE RED-EARED TURTLE IN A RARELY-SEEN BIT OF ACROBATICS

Defining the

BEN SHAHN

There is an ancient cleavage still manifest in man's effort to comprehend himself, a decisive split in modes of approach to self-understanding. On the one hand, there are those who consider scientific method essentially capable of coming to a full understanding of man; on the other hand, there are those who maintain that man is a unique creature who persistently transcends all efforts toward definition on the scientific level and who must, therefore, be approached somehow from *within*, in terms of his inwardness.

The clash between these ultimately opposed attitudes is more than another academic dispute. Nothing less is at issue than the meaning of man, and depending on the character and texture of the debates carried on over these different approaches rests the conception of our very lives and their signification for ourselves and for history. The problem of man is, in this sense, the central issue not only of our age but of our humanity, and the exploration of the questions involved presents itself as a special challenge in our quest for enlightenment.

The analysis of the counter claims made by those advocating scientific method and those adopting a more existential approach requires some preliminary definition of terms. "Scientific method" is, of course, a rather loosely used phrase, and its opposite number in this context is no less vague. But definitions are notoriously evasive and, moreover, run the risk of placing the problem in question in a light which may be more bewildering than illuminating. In this sense, the present essay is as a whole an

By Maurice Natanson

two worlds of man

effort toward realizing meaningful definitions for certain key terms. Instead of beginning with these definitions, let us rather end with them.

The chief business of science is the descriptive determination of the order of events in nature. The practical goal of this activity is control of nature. The main instrument for realizing such control is the power of accurate prediction. The theoretical apparatus of scientific method underlies the entire endeavour and constitutes its rationale. What may be referred to as the "theory" of science is the systematic and coherent expression of these functions in formal terms.

But taken as a way of understanding man, science articulates one principal theme: the idea that all of the objects of scientific analysis, man included, are part of one continuous framework or pattern and that scientific method is capable of attaining, in time, a complete understanding of man as well as of nature. Although specific techniques of inquiry must vary as the object under analysis requires, the fundamental way of approach remains the same. Stated most simply and directly: science is capable, in principle, of coming to a complete knowledge of the nature of man.

This view of science may be treated not only as enunciating a method of analysis but also as a definite conception of the world of man, a world that is available to the trained observer. Man's world, in the scientific view, is one seen from the *outside*, from the so-called objective standpoint of the disinterested, professionally trained observer. Thus, the object investigated is grasped within a conceptual scheme fixed at the outset in behavioral terms. What is sometimes referred to as "subjectivism," that is, attitudes or feelings that are available only to the individual undergoing the experiences in question, is, at best, under suspicion and at worst, the "enemy." The ideal is an "objective" description of man's world which can be validated by any trained and competent observer. Let us term this general view "the world from outside."

In explicit contrast is the opposing approach to the nature of man, which looks at man as a unique being within the natural world who requires quite special modes of investigation. Unlike all other creatures in the domain of nature, man is a being who possesses the remarkable capacity of self-consciousness. Man is not only man; he also *knows* that he is man. At the same time that he is a being who is interpreted by observers, by fellow men, whether scientists or not, he is also a being who interprets himself and his world. If the scientist's concern is with man as an object for the special observer, the second position (which we may call "existential" for want of a better substantive) takes as its task the systematic analysis of the observer observing himself. And just as scientific method presents us with a certain way of looking at the world — the world from outside — so the existential mode of approach gives us another world, "the world from within."

continued

WORLDS continued

As a being in the everyday, commonsense realm of experience, I live in spatial and temporal dimensions which are most intimately *mine*: that it is nine o'clock in the night as measured by a chronometer does not place me in time if my night is a magical or desperate one. The nine PM I live in tonight may be splendid or base, and accordingly I give reality and determination to my temporal scene. For an observer, it is night; for my world, it may be day.

Similarly, my spatial reality is deeply subjective: the world is organized about me as *I* view it, and all objects and persons are situated with respect to their bearing from my present position. I may be "there" for my observer, but I am emphatically "here" for myself. And the same line of analysis may be extended to all levels of reality. The scene before me is the scene as I interpret it, the scene as I "live it," the scene as it unfolds for me and discloses itself to my awareness. "The" world turns out to be the world as it is for me, the world as I grasp its meanings and implications and as I decode its messages and decipher its mysteries. The world accessible to me is *mine* in a most profound sense, for my world is the coherent unity of intention and interpretation within which my reality unfolds and my life is articulated.

It might appear that the two worlds we have called into question, the scientific "world from outside" and the existential "world from within," are not so much contradictory views of reality as they are alternative levels of viewing a single universe of meaning. I think that false compromise is as much to be avoided here as true correlation is to be sought. In one sense, the two views are disjunctive; in another sense, they are complementary.

First, it may be argued that the scientific and existential approaches are contradictories to the important extent that they define radically distinct images of man. For the one view, existential analysis is hopelessly subjective and emotive; for the other view, scientific method is incurably reductionistic and blind to transcendent truths. But to consider these alternatives as complementary means to establish a division of labour among specialists with very different concerns. Undoubtedly, the scientific method may be utilized to clarify the nature of man's behavioral, bio-physical, and bio-psychological activity; but existential analysis turns to the illumination of the meaningful world in which man builds his symbolic castles and lives within their interpretive walls.

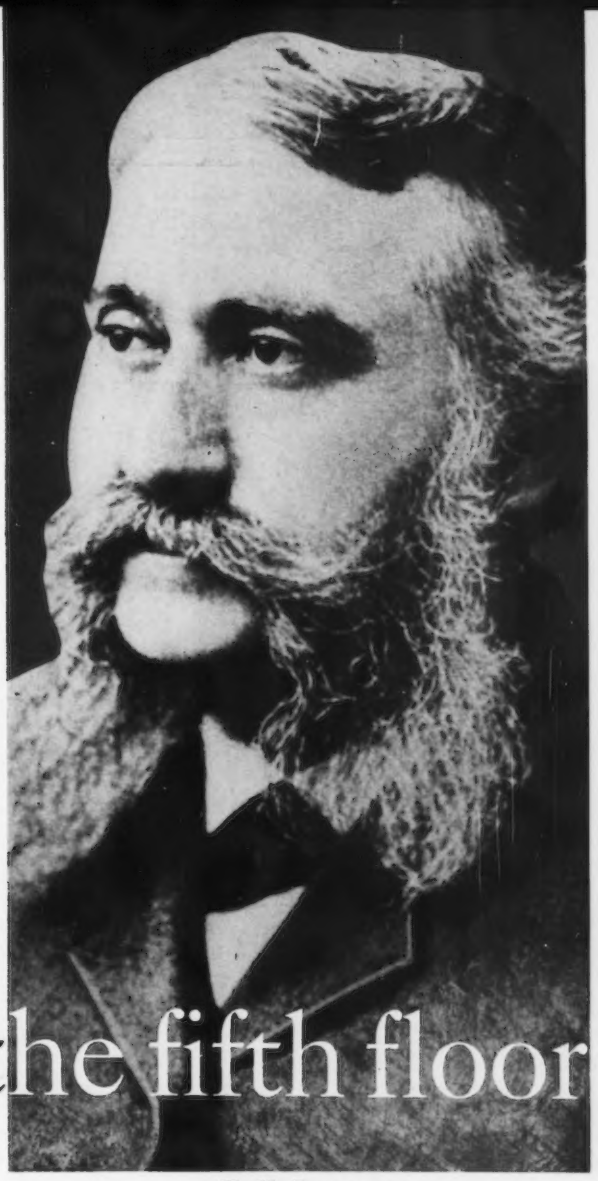
The traditional chasm separating these approaches is an indication that their lines of opposition are deeply rooted and that superficial efforts to establish concord between the alien camps will not prove ultimately successful. A final glance at the two worlds of man may help to clarify the reasons for the rift as well as the possibilities for a rapprochement.

The world of science is rooted, in its deepest intention, in the fusion of knowledge and power. Francis Bacon's dictum that "knowledge is power" is the herald to a tradition which continues in force today. The goal of a power-directed science is not only the control of nature and of man within nature but, perhaps equally important, the realization of the claim that man is in the end nothing more than the most complicated part of the machinery of nature, but still machinery. Scientific dominion means the placement of final valuation on the full realization of man's control of his world and of himself. But it is exactly at this point that the existential view takes absolute issue by insisting that the problem that ultimately confronts man is not his control of the world or of himself but his true comprehension of himself. The placement of ultimate value is not on doing but on understanding, not on mastery but on insight.

Two styles of life are reflected in the two worlds. One urges man to conquer his external obstacles and find his life's meaning in his victory over externals; the other demands of man an interior struggle in which the very matrix of his being must be brought to self-clarity and fulfillment. The hostility between these styles of life is measured by a mutual disdain regarding the interpretation of the human situation and its therapeutic.

To the extent that there is hope for a meaningful bridge between these worlds the following consideration may be relevant: the interior world of man is not rendered more meaningful by trying to turn it "inside out," nor is it really made "scientific" on that account; rather, the superiority of one mode of interpretation over another must itself remain in question and be decided on in concrete cases by specific relevances. A mutual tolerance may not lead to a mutual trust, but caution may lead to appreciation, and humility to hope, and all combined may yield a true vision of one world by the other.

By Jack A. Haddick



H. H. BANCROFT

The men on the fifth floor

Hubert Howe Bancroft has long been regarded with suspicion by his fellow historians. His massive shelf of 39 fat volumes covering the Western part of North America from the Isthmus of Panama north through Alaska forms an indispensible background for any library dealing with that area. But his methods of mass producing his great *Works* shocked the literati of his time, and professors today warn their students that the Bancroft histories contain error of fact and a subjective point of view closely akin to prejudice.

Yet no historian in Bancroft's field can efficiently produce a general history without consulting him; few monographs can be written safely without noting what Bancroft had to say on the subject. And contemporary historians, troubled by the problems of extracting contemporary history from the tons of paper dispensed daily by governmental and private sources, have studied his techniques with great interest.

Bancroft's first hesitant thoughts about producing a history came to him in 1869. Then a prosperous 37-year-old California publisher and bookseller, he had collected over a period of years a total of some 60,000 items, books, pamphlets, papers, documents of every kind, dealing with the area in question.

The information contained in his vast library, he knew, was of great value; but in what form could that value be realized to himself and the people of the West? He toyed with the idea of an encyclopedia, but as he thought about it, he resolved "to strike for the highest, brightest mark" — the writing of history.

Once decided, Bancroft plunged into the work with characteristic energy. His entire library had to be or-

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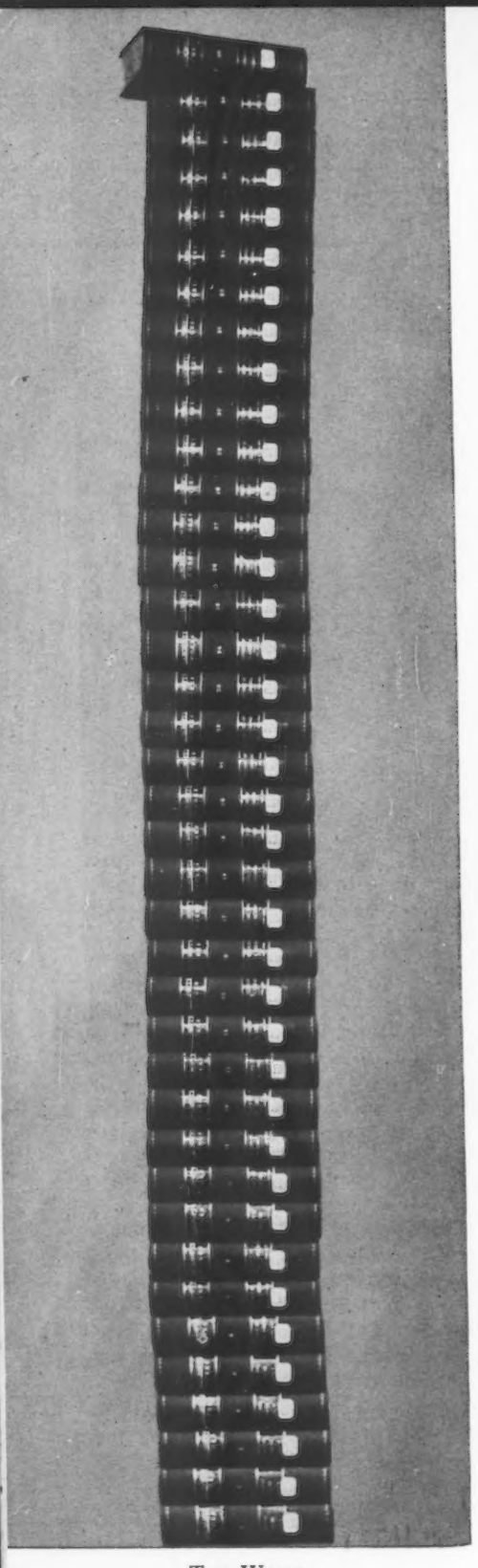


THE WORKS

FIFTH FLOOR continued

The staff was enthusiastic, and when

ganized, a monumental task in itself. He secured as his first assistant a man named Henry Lebbeus Oak, who was to remain with him through 19 history-writing years. He hired cataloguers, card makers, and various clerical help and set them to work on the famous fifth floor of his San Francisco bookstore. In these efficient hands and with the expenditure of about $35,000, a workable index emerged.

Bancroft then realized that his project, which eventually grew to include the recording of the history of one-twelfth of the earth's surface, required more than the time, talent and energy of one man. He had successfully operated a large-scale business by dividing the work into departments, hiring good men to head them, and placing responsibility on them. Applying this experience to his vast literary enterprise, he sought out competent literary craftsmen. A sure instinct for judging personnel combined with the ability to meet payrolls regularly secured for him a corps of researchers and writers of amazingly high quality.

Although Bancroft had as many as 300 people working at notetaking, abstracting documents, cataloguing and taking dictated interviews, Henry Oak, William Nemos, Thomas Savage, Frances Fuller Victor, Enrique Cerrutti, J. J. Peatfield, T. Arundel Harcourt, Albert Goldschmidt, Walter M. Fisher, Alfred Bates and Ivan Petroff formed the core of his organization. Their tasks, first intended to be that of abstracting, compiling, and writing rough drafts for Bancroft's complete revision, ranged from translation and research to the writing of entire volumes. Contemporary researchers credit Oak with the authorship of approximately ten volumes, putting him on a par with Bancroft himself, whose personal contributions, ranging from 1/18 of Volume II of *Central America* to 7/8 of Volume II of *The Northwest Coast*, are estimated to total about the same number.

Despite the great amount of published material produced by his assistants, Bancroft made only fleeting and unsatisfactory references to their aid. Perhaps the most specific credit may be seen in the preface to the work on Central America. There he stated that he ". . . was able to use the faithful and efficient labors of Mr. Henry L. Oak, Mr. William Nemos, Mr. Thomas Savage, Mrs. Frances Fuller Victor, and Mr. Ivan Petroff."

Most of his assistants, however, were enthusiasts in the cooperative project. In general they understood and accepted their position, which Bancroft made clear at the start. Their product was his to use as he liked, to alter, to include with changes to conform to the general pattern, or to throw in the wastebasket. He did not stipulate that they remain quiet concerning the facts of authorship, but the writers appreciated their good situa-

reviewers were not, Bancroft rewrote their reviews

tions and regular pay. He desired that they should produce for him four or five pages a day, ready for the printer. Comparatively few could meet that standard, despite a regular ten-hour working day; Henry Oak, Mrs. Victor, William Nemos and Thomas Savage came closest. Indeed, Bancroft felt that Oak produced history more cheaply than any of his other employees.

As Bancroft's collecting grew to include the entire western coast of the North Americas, so his history project quickly broke its California bounds. Most disconcerting to him at the start was the intrusion of the aboriginal races on the project. He privately admitted that he gladly would have avoided them; but the savages were there, and he had to write them up to get rid of them. To *Native Races*, however, he owed a great deal of the final success of the whole endeavor.

The historian's business background proved immensely helpful in the marketing of this study and played a large part in the later sales campaign. He published the first volume in 1874 and had the others near completion. To add to the prestige of the work, he arranged to have this volume brought out by D. Appleton and Company of Boston, although his own San Francisco firm was completely capable of handling the job.

He determined that the work would get a good hearing; his investment was too heavy to take chances on unfavorable first reviews endangering the later volumes in the series. With proofs in hand he visited the eminent men of the west coast to secure favorable comment.

One of the reviews, written by President Daniel C. Gilman of the University of California, was disappointing. Submitted to the businessman-author before publication, it was found inadequate and thrown in the wastebasket. Bancroft had one of his staff write another glowing with proper color, secured for it the signature of J. Ross Browne, then one of the Pacific Coast's best-known writers, and arranged to have it substituted for President Gilman's less impressive notice.

Armed with his proofs and reviews, Bancroft headed east to obtain the opinions of the literary giants of the day. He was successful beyond the brightest dreams of a beginning author. He talked with Whitman, Lowell, Whittier, Emerson, Beecher, Wendell Phillips, and others. Their statements were all that he could have desired.

A pamphlet was prepared reproducing the comments of these writers, and with it Bancroft launched his sales campaign. It was enormously successful. The legitimate reviewers were nearly as fulsome as those Bancroft had primed. *London's Westminster Review* noted that "His style is clear and without affectation, recording to us the direct simplicity of Herodotus." The *New York Sun* said he wrote well and gracefully. The *London Times* thought his narration clear, logical and distinctive. "Fills me with admiration," said the English historian W. H. Leckie. Herbert Spencer found that ". . . his collection of works is very valuable for my own ends on writing the *Beginnings of Sociology*."

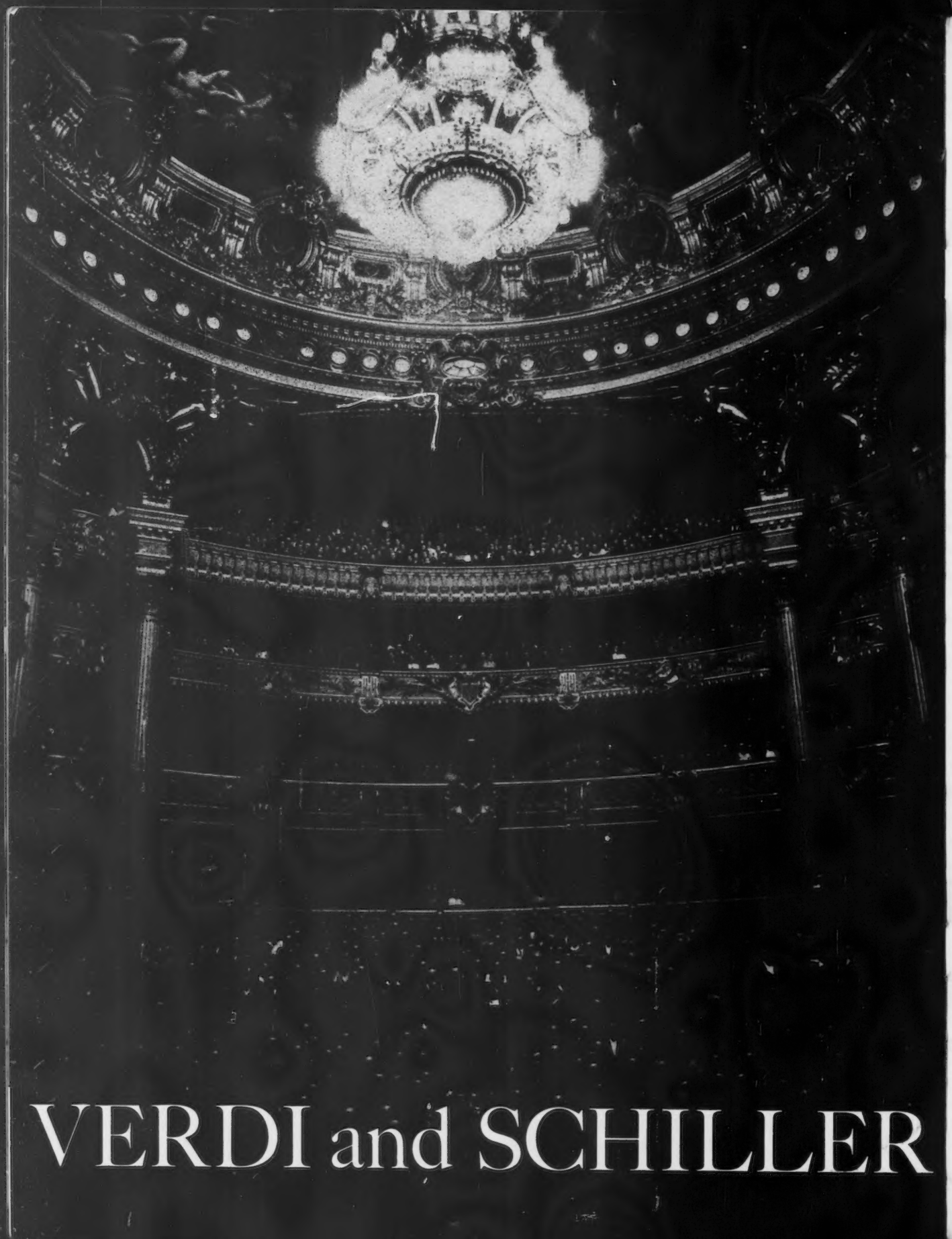
The sales effort successfully launched *Native Races* and was applied with equal or greater success to the later volumes as they rolled from the presses. Some high pressure work was done among all classes of purchasers from the humble to the great. Leland Stanford proudly bought 40 sets of the works, not realizing the final size of his purchase. Disgruntled by the flood of books that poured in on him, he cancelled his order. Some of his canvassers embarrassed Bancroft by their sales methods, but the results were financially advantageous. The work ultimately produced a profit of about a half million dollars.

Having his *Works* substantially finished and off the presses in 1890, Bancroft turned to the enterprise which earned him another heavy profit, but which brought his more ambitious efforts in history under grave and largely justified censure. He began to publish a series of subscription biographies titled *Chronicles of the Builders of the Commonwealth: Historical Character Study.*

In seven volumes he brought together the biographies of fellow Californians who had paralleled his course in the west—poor and frugal youth, talent for making money, and finally significant financial success. These men paid for their biographies by space rates, varying from $1,000 to $10,000. On the average there was one page of biography for every hundred dollars of subsidy. Heavy contributors received a handsome steel-engraved likeness to accompany their stories. Such noted men as Fray Junipero Serra and Benito Juarez were honored with biographies free of charge.

Despite the subsequent criticism of these volumes as commercial exploitation, they possess substantial merit. They were written by the best available talent on the Pacific Coast—Bancroft's team of Savage, Nemos and Bates (Oak's health had already forced him into retirement). The total take on the biographies amounted to about $219,000, covering the cost of publication several times over, but this particular project threw the entire *Works* under a lasting cloud.

Before his death in 1918, honors and awards of all kinds came to Hubert Howe Bancroft. And in spite of the controversial nature of their authorship, his *Works* are of immense value for the student of western North America, Mexico and Central America. These bulky volumes cover vast subject areas so thoroughly that few trails can be taken in the Bancroft fields without the student's finding that Bancroft preceded him.



VERDI and SCHILLER

Seldom has a major composer been so drawn to the dramatic literature of other nations as a source of his own libretti as Giuseppe Verdi. Upon Shakespeare he based his *Macbeth, Otello,* and *Falstaff.* From Victor Hugo he derived the plot of *Rigoletto* and *Ernani.* But, numerically at least, the greatest source of his operatic libretti was the dramas of the German poet Friedrich von Schiller.

Schiller's dramas represent in some ways an attempt to synthesize Shakespearean, Greek, and French tragedy, in other respects a conglomerate of the melodrama of intrigue and the lofty drama of ideas in the wake of Kantian philosophy. Whereas Goethe, whose name is inevitably bound up with Schiller's, has to most people become a poet whose plays are read from the printed page, Schiller was able to combine drama and theatre and hold the stage. There is music and pathos in his verse, theatre in every situation. He evoked a genuine following of imitators among theatrically minded writers of the Western World, not the least of whom was Richard Wagner, who borrowed the whole structure of some of Schiller's dramas.

It is difficult to determine just which facet of Schiller appealed to Verdi. It is a fact, however, that four of his operas are based on Schiller dramas. There is first of all *Giovanna d'Arco* (1845), utilizing Schiller's version of the oft-treated Joan of Arc story (*Die Jungfrau von Orleans*); *I Masnadieri* (1847), based on Schiller's revolutionary "Storm and Stress" drama *Die Rauber* (The Robbers); *Luisa Miller* (1849), using the original title of the Schiller play which that author later renamed *Kabale und Liebe* (Intrigue and Love); and lastly *Don Carlo* (1867), the libretto of which is modelled very directly on Schiller's powerful drama of the same title (plus the "s"). Of these, only the latter is still in the regular repertoire of the Metropolitan Opera.

It has been claimed that *Simone Boccanegra* (1847) was based on the Schiller drama *Fiesko,* a fiery piece about a revolt in Genoa, but the composer expressly took trouble to deny this in a letter to Countess Negroni in 1881. We must accept this denial as a statement of intentions. Whether Verdi's love for Schiller's dramas may have affected his choice of the libretto may be clearer from our discussion below.

The critics acknowledge one other Schiller scene in a Verdi opera: the punning sermon of Melitone in *La Forza del Destino.* The situation is almost identical with the sermon of the Capucian Monk in *Wallensteins Lager,* the first part of Schiller's Wallenstein trilogy. Here the monk tries to preach to the soldiers, and, in order to attract their attention, preaches in a combination of Latin and German, using images from the soldiers' own language in an incomparable *buffo* scene.

There are, then, few Schiller plays which cannot be linked in some way to Verdi. Of these, *Wilhelm Tell* had already been set successfully by Rossini and *Maria Stuart,* a tale of the struggle between Queen Elizabeth I and her Scottish adversary, is too much the drama of ideas and of the soul to be suited for an operatic libretto. But *Die Braut von Messina* (The Fiancee from Messina), Schiller's attempt to recreate Greek tragedy, with chorus,

continued

By Alfred R. Neumann

VERDI
continued

GIUSEPPE VERDI

fate, and all their trappings, does not fall in this category.

We would hardly suspect that a nineteenth century Italian composer might be drawn to this last pseudo-Greek tragedy, but I believe that, although only indirectly, Verdi utilized certain aspects of Schiller's *Die Braut von Messina* in his own *La Forza del Destino*. Since our argument revolves around plot details, and not music, the composer's supposed main concern, we must first clarify Verdi's relationship to his librettists.

Each of the four acknowledged Schiller operas was written by a different librettist. Therefore the predilection for Schiller was clearly Verdi's, not his rhymesters'. Franz Werfel, in his essay on Verdi, states this composer's relationship to his librettists very clearly: "The letters show us that Verdi was always his own playwright, planning the scenario for himself, shaping the characters, writing the dialogue, and leaving the literary men with nothing to do but turn his swift prose into meters that he had carefully worked out beforehand. The librettist served him solely as a verse-maker." We may therefore speak of Verdi's choice and attitude when we discuss the verbal and dramatic aspects of his operas as well as when we speak of his music.

Officially, *La Forza del Destino* is based on a romantic Spanish drama, *Don Alvaro, o La fuerza del sino* (Don Alvaro, or the force of destiny) by one of Spain's most illustrious romantic poets, Don Angel de Saavedra, Duke de Rivas, which was written in 1835. We know that Verdi thought of making it into an opera as early as 1852. Verdi reduced the five acts to four, eliminated one brother by merging Don Carlos and Don Alfonso de Vargas into one character, and made some other, relatively minor changes in the adaptation. But where does Schiller enter the picture?

The plot of *Die Braut von Messina*, in brief, is as follows: The King of Messina has died, leaving his wife, twin sons and a daughter. It has been prophesied that the daughter will either reconcile or destroy her two brothers, who are mortal enemies. So her mother has seen to it that she was brought up in a convent, ignorant of her own heritage. Now the time has come for the brothers to rule, and they have agreed to forget their quarrel. The mother has ordered the daughter, Beatrice, to be brought home from the convent, to seal the reconciliation.

But it appears that Don Manuel, the older brother, has met Beatrice while hunting near the convent and has had her removed in order to elope with her, ignorant of her identity; while Don Cesar, the other brother, has seen her at their father's funeral, and, attracted to her, has been seeking her ever since. When she is finally brought to the stage, she again inflames the brothers' rage against each other; they become rivals for the affections of their sister, before realizing that their love is incestuous. Cesar kills Manuel as his rival, and later stabs himself when he realizes fully his guilt. The fate that had decreed the destruction of the brothers through the sister would not be evaded.

Thus, in briefest outline, the plot of Schiller's drama. Fate as the overriding motive of action is present here as it is in *La Forza del Destino*. A whole chain of fate-tragedies, of which *Die Braut* was the first in Germany, links the two. As an attempt to find the reason for tragic occurrence in the Greek manner within Christian drama, this genre found wide response. The lack of personal will, the dominance of destiny, the imperturbable progression of prescribed events in *La Forza del Destino* can thus be called Schilleresque features.

There are other specific things which tie this opera and drama: A woman stands between Schiller's two inimical brothers; a lover and friend stands between Eleanor and Don Carlo in the opera. A convent becomes the refuge of the daughter, whose presence and identity are secret, and who is to be the doom of the house of Messina; convent and monastery shelter Eleanor and Don Alvaro, secure from detection. Disguises, sudden recognitions, duels, murder against one's better judgment characterize both drama and opera. But over it all hovers the cloud of doom, of the inevitable that fate has decreed and that man must carry out, against his will. In this melange of Christianity and paganism, classicism and modernism, Catholicism and fatalism, in man's vain struggle against fierce and implacable destiny the Schiller tragedy and the Verdi opera merge in a common idea.

The affinity of the two stage works is not one of influence or borrowing or modelling. We know that Verdi knew and loved Schiller's dramas and that the Duke de Rivas, as an educated Romanticist, must have been familiar with the German's work. We therefore may infer a subconscious attraction to the *Braut von Messina* and the Alvaro story, bred in Verdi's case by familiarity with the Schiller play. Rivas' play may have been the link needed to make this additional Schiller drama operatic material for Verdi, since here the ideas of Schiller that could attract Verdi were preserved, while shedding the mantle of neo-classicism.

And here the irony of Fate steps in once more: it was in *Die Braut von Messina* that Schiller admittedly wanted to recreate true Greek tragedy on the basis of opera, with chorus and music, as a *Gesamtkunstwerk*, as an integrated work of art. He never found a suitable composer. In Verdi, however, certain operatic elements of the drama found the fulfillment of their destiny.

THE UNIVERSITY CALENDAR

SEPTEMBER

7 Reception for new faculty members
14 General Faculty Meeting, 10 AM, Cullen Auditorium
17 Classes begin
20 Freshman Orientation Program
28 Journalism Assembly, through September 29
29 Football, University vs. Mississippi State, here

OCTOBER

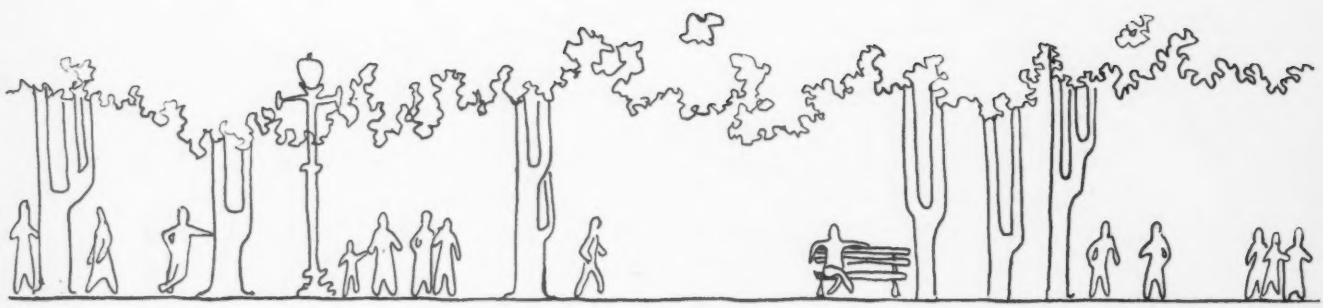
6 Football, University vs. Mississippi U., Jackson
12 Homecoming activities begin
13 Football, University vs. Texas A& M, here; Homecoming Game
20 Student Activities Conference
20 Football, University vs. Oklahoma A & M, Stillwater
27 Football, University vs. Auburn, Auburn

NOVEMBER

3 Football, University vs. Wichita U., Wichita
12 Mid-semester evaluations; through November 17
10 Football, University vs. Tulsa U., here
17 Football, University vs. Villanova, here
23 Texas State Teacher's Association Meeting; through November 24
24 Football, University vs. Texas Tech, Lubbock
27 Thanksgiving Religious Program
29 Thanksgiving holidays begin

DECEMBER

1 Football, University vs. Detroit, here
13 Christmas Religious Program
17 Christmas holidays begin for students, except in College of Law and College of Pharmacy
19 Christmas holidays begin for law and pharmacy

JANUARY

21 Fall semester final exams begin; through January 28
28 Official close of the fall semester